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L/Cook 4/12/05

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'(FILE 'HOME' ENTERED AT 09:40:12 ON 12 APR 2005)

FILE 'BIOSIS, CAPLUS, EMBASE, MEDLINE, CANCERLIT, JAPIO' ENTERED AT  
09:40:35 ON 12 APR 2005

L1 0 S (PA ADJ 1)  
L2 564052 S PA AND 1  
L3 17117 S L2 AND OVA?  
L4 10696 S L3 AND CELL  
L5 3345 S (PA-1)  
L6 74 S L5 AND GLYCOS?  
L7 2 S L6 AND ZONA?  
L8 2 DUPLICATE REMOVE L7 (0 DUPLICATES REMOVED)  
L9 2 S L5 AND ZP3?  
L10 2 DUPLICATE REMOVE L9 (0 DUPLICATES REMOVED)  
L11 11138 S TERATOCARCINOMA?  
L12 2 S L11 AND ZP3?  
L13 2 DUPLICATE REMOVE L12 (0 DUPLICATES REMOVED)  
L14 18 S L11 AND ZONA?  
L15 8 DUPLICATE REMOVE L14 (10 DUPLICATES REMOVED)

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L1           0 S (PA ADJ 1)  
L2        564052 S PA AND 1  
L3       17117 S L2 AND OVA?  
L4       10696 S L3 AND CELL  
L5       3345 S (PA-1)  
L6       74 S L5 AND GLYCOS?  
L7       2 S L6 AND ZONA?  
L8       2 DUPLICATE REMOVE L7 (0 DUPLICATES REMOVED)  
L9       2 S L5 AND ZP3?  
L10      2 DUPLICATE REMOVE L9 (0 DUPLICATES REMOVED)  
L11      11138 S TERATOCARCINOMA?  
L12      2 S L11 AND ZP3?  
L13      2 DUPLICATE REMOVE L12 (0 DUPLICATES REMOVED)  
L14      18 S L11 AND ZONA?  
L15      8 DUPLICATE REMOVE L14 (10 DUPLICATES REMOVED)

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AN 2001:396228 CAPLUS

DN 135:105502

ED Entered STN: 01 Jun 2001

TI Characterization of the biologic activities of a recombinant human zona pellucida protein 3 expressed in human ovarian teratocarcinoma (**PA-1**) cells

AU Dong, Ke Wen; Chi, Ting Fung; Juan, Yu Wen; Chen, Chih Wei; Lin, Zhiyong; Xiang, Xiao-Qin; Mahony, Mary; Gibbons, William E.; Oehninger, Sergio

CS Department of Obstetrics and Gynecology, The Jones Institute for Reproductive Medicine, Virginia Medical School, Norfolk, VA, 23507, USA

SO American Journal of Obstetrics and Gynecology (2001), 184(5), 835-844  
CODEN: AJOGAH; ISSN: 0002-9378

PB Mosby, Inc.

DT Journal

LA English

CC 13-6 (Mammalian Biochemistry)

Section cross-reference(s): 6

AB This study was undertaken to clone and express a recombinant human zona pellucida protein 3 and to characterize its biol. activities as a sperm ligand and an inducer of the acrosome reaction. Human ovarian teratocarcinoma (**PA-1**) cells were transfected with an expression vector containing human zona pellucida protein 3 complementary DNA with a sequence coding for a 6-histidine tail introduced into its 3' end. Purification of the secreted glycoprotein was performed by sequential affinity (lectin and nickel-nitrilotriacetic acid) and ion-exchange chromatog. Western blot anal. confirmed a mol. weight of approx. 65 kd for the purified product. A cell-free translation system revealed a correctly sized protein backbone of 47 kd. The recombinant human zona pellucida protein 3 demonstrated specific, potent, and dose-dependent competitive inhibition of sperm-zona pellucida binding in vitro under hemizona assay conditions. Recombinant human zona pellucida protein 3 also stimulated the acrosome reaction of live sperm. This effect was fast, dose dependent, and capacitation time dependent. Furthermore, advance incubation with pertussis toxin, an inactivator of heterotrimeric G proteins, blocked recombinant human zona pellucida protein 3-induced acrosomal exocytosis. The recombinant human zona pellucida protein 3 expressed in **PA-1** cells manifested the full spectrum of expected biol. activities. It therefore represents a valuable tool for examination of human fertilization and the design of new strategies in diagnosis of male factor infertility and in contraception.

ST zona pellucida protein 3 egg sperm acrosome fertilization

IT Animal cell line

(PA-1; characterization of biol. activities of recombinant human zona pellucida protein 3 expressed in human ovarian teratocarcinoma (**PA-1**) cells)

IT Sialoglycoproteins

RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)

(ZP3 (zona pellucida, 3); characterization of biol. activities of recombinant human zona pellucida protein 3 expressed in human ovarian teratocarcinoma (**PA-1**) cells)

IT Sperm

(acrosome; characterization of biol. activities of recombinant human zona pellucida protein 3 expressed in human ovarian teratocarcinoma (**PA-1**) cells)

IT Fertilization

Sperm

(characterization of biol. activities of recombinant human zona pellucida protein 3 expressed in human ovarian teratocarcinoma (**PA-1**) cells)

IT Egg

(zona pellucida; characterization of biol. activities of recombinant human zona pellucida protein 3 expressed in human ovarian teratocarcinoma (**PA-1**) cells)

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Oehninger, S; Hum Reprod Update 2000, V6, P160 MEDLINE

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IT Fertilization

Sperm

(characterization of biol. activities of recombinant human zona pellucida protein 3 expressed in human ovarian teratocarcinoma (**PA-1**) cells)

IT Egg

10/2001  
April. 2001

✓ not  
glycosylated

(zona pellucida; characterization of biol. activities of recombinant  
human zona pellucida protein 3 expressed in human ovarian  
teratocarcinoma (**PA-1**) cells)

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Oehninger, S; Hum Reprod Update 2000, V6, P160 MEDLINE

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## ANSWER 1 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:117547 CAPLUS  
 DN 138:133509  
 ED Entered STN: 14 Feb 2003  
 TI Human zona pellucida proteins and methods of their use in diagnosing male infertility  
 IN Chi, Ting-Fung; Lin, Zhiyong; Dong, Kewen; Hsu, Ming-I.; Cheng, Jr-Gang; Zheng, Heming  
 PA Trinity Biomedical Technology Corporation, USA  
 SO PCT Int. Appl., 82 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM A61B  
 CC 9-15 (Biochemical Methods)  
 Section cross-reference(s): 14

## FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003011118	A2	20030213	WO 2002-US24360	20020801
	WO 2003011118	A3	20030731		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	US 2003148930	A1	20030807	US 2002-209664	20020801
	EP 1421104	A2	20040526	EP 2002-753427	20020801
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
PRAI	US 2001-309532P	P	20010802		
	US 2001-309553P	P	20010802		
	US 2001-309664P	P	20010802		
	US 2001-339632P	P	20011211		
	WO 2002-US24360	W	20020801		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2003011118	ICM	A61B
US 2003148930	ECLA	C07K014/705; G01N033/569H; G01N033/68T

AB Reagents, methods, and kits are described that are useful for fertility testing and that in many cases provides much faster, convenient and rapid determination of male infertility. The reagents described include properly glycosylated human **ZP3**, ZP2, ZP1, glycosylated peptides thereof, fusion proteins such as green fluorescent protein **ZP3**, non-covalent complexes of ZP2 with **ZP3**, fusion protein of ZP2-**ZP3**, solid phase materials such as agarose beads coated with binding agents such as **ZP3**, and other artificial zona. Methods are provided that, in many cases convert a complex biol. event into a well defined biochem. binding event based on one or more of the reagents. Such methods are much easier to set up and monitor, allowing more convenient and inexpensive diagnostic testing for male fertility. The acrosome reaction is detected in other embodiments by virtue of quantitating one or more released substances. Kits are further provided that contain one or more reagents useful for testing at a diagnostic laboratory or other facility. Green fluorescent protein-recombinant human **ZP3** was conjugated to activated carboxylate-modified microspheres and used in an artificial zona assay.

## ANSWER 1 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:117547 CAPLUS  
 DN 138:133509  
 ED Entered STN: 14 Feb 2003  
 TI Human zona pellucida proteins and methods of their use in diagnosing male infertility  
 IN Chi, Ting-Fung; Lin, Zhiyong; Dong, Kewen; Hsu, Ming-I.; Cheng, Jr-Gang; Zheng, Heming  
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 CODEN: PIXXD2  
 DT Patent  
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	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
PRAI	US 2001-309532P	P	20010802		
	US 2001-309553P	P	20010802		
	US 2001-309664P	P	20010802		
	US 2001-339632P	P	20011211		
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ST zona pellucida protein reagent diagnosing male infertility; green fluorescent protein conjugate **ZP3** microsphere reagent; artificial zona assay GFP **ZP3** microsphere conjugate

IT Animal cell line  
(293, properly glycosylated sperm-binding peptide prepared from; human zona pellucida proteins for diagnosing male infertility)

IT Hemagglutinins  
RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); DGN (Diagnostic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)  
(A, peptide, complexes with properly glycosylated sperm-binding peptides; human zona pellucida proteins for diagnosing male infertility)

IT Eubacteria  
(BL21(DE3)pLySS, human ZP2 expression in; human zona pellucida proteins for diagnosing male infertility)

IT Animal cell line  
(**PA-1**, properly glycosylated sperm-binding peptide prepared from; human zona pellucida proteins for diagnosing male infertility)

IT Proteins  
RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); DGN (Diagnostic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)  
(V5, peptide, complexes with properly glycosylated sperm-binding peptides; human zona pellucida proteins for diagnosing male infertility)

IT Proteins  
RL: ARG (Analytical reagent use); BPN (Biosynthetic preparation); BSU (Biological study, unclassified); DGN (Diagnostic use); ANST (Analytical study); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(ZP (zona pellucida); human zona pellucida proteins for diagnosing male infertility)

IT Proteins

ST zona pellucida protein reagent diagnosing male infertility; green fluorescent protein conjugate **ZP3** microsphere reagent; artificial zona assay GFP **ZP3** microsphere conjugate

IT Animal cell line  
(293, properly glycosylated sperm-binding peptide prepared from; human zona pellucida proteins for diagnosing male infertility)

IT Hemagglutinins  
RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); DGN (Diagnostic use); ANST (Analytical study); BIOL (Biological study); USES (Uses)  
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(ZP (zona pellucida); human zona pellucida proteins for diagnosing male infertility)

IT Proteins